



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,448	03/01/2002	Till Kaz	HOE-680	6674
20028	7590	08/15/2005	EXAMINER	
Lipsitz & McAllister, LLC 755 MAIN STREET MONROE, CT 06468			MAYES, MELVIN C	
			ART UNIT	PAPER NUMBER
			1734	
DATE MAILED: 08/15/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/087,448

Applicant(s)

KAZ ET AL.

Examiner

Melvin Curtis Mayes

Art Unit

1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 47-92 is/are pending in the application.
- 4a) Of the above claim(s) 51-55, 59-79 and 86-92 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 47-50, 56-58 and 80-85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

(1)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(2)

Claim 82-84 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 82 claims a contact layer is sprayed onto said carrier but where is this contact layer with respect to the rolled-on reaction layer? The claim should make it clear that the contact layer is sprayed on the carrier on the side of the carrier opposite that of the rolled-on reaction layer, as described in the specification.

Claim Rejections - 35 USC § 102

(3)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(4)

Claims 47, 48 and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Bilhorn 3,740,270.

Bilhorn discloses a method of making duplex electrode (multilayer electrode or electrode assembly) comprising: applying coatings of nonreactive conductive adhesive (first layer) on a metal carrier strip (carrier) by applicators by techniques such as rolling; and applying negative electrodes (function layer which is a reaction layer) on one of the coatings by applicators such as spray deposits of particles of metal or particles of metal dispersed in a binder matrix (col. 2, line 60 – col. 3, line 46, col. 6, lines 66-70).

(5)

Claims 47, 48, 56 and 80 are rejected under 35 U.S.C. 102(b) as being anticipated by Kilduff 3,751,301.

Kilduff discloses a method of making an electrode (multilayer electrode or electrode assembly) comprising: applying a conductive coating to a metallic shim; applying an active material coating of lead dioxide particles in resin (first layer which is a reaction layer) to the conductive coating (carrier) by roller coating; and applying a coating of dry lead dioxide particles (function layer which is a reaction layer) to the active coating by spray coating (col. 2, line 58 – col. 5, line 60).

(6)

Claims 47, 48, 50 and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugikawa 5,531,955.

Sugikawa disclose a method of making a metallic porous sheet for use as an electrode plate (multilayer electrode or electrode assembly) comprising: applying adhesive agent (first layer) to a porous sheet such as mesh sheet (carrier mesh) by roll coating; and applying metallic powder to the adhesive agent by spraying from jetting devices to form a conductive metallic layer (function layer which is a reaction layer) (col. 8-10).

Claim Rejections - 35 USC § 103

(7)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(8)

Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bilhorn in view of Shirodker 3,859,134.

Bilhorn discloses that the conductive adhesive to be applied by rolling may be thermosensitive (col. 3, lines 19-21).

Shirodker teach that thermoplastic (thermosensitive) adhesive is applied as a coating using heated rollers (col. 3, lines 24-34).

It would have been obvious to one of ordinary skill in the art to have modified the method of Bilhorn by rolling thermosensitive adhesive on the carrier strip using heated rollers, as

Art Unit: 1734

taught by Shirodker. The use of heated rollers to apply thermosensitive adhesive would have been obvious to one of ordinary skill in the art to keep the adhesive in fluid form until applied by rolling.

(9)

Claims 47, 50, 56-58, 80, 81 and 85 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fan et al. 6,627,035 in view of either Kilduff 3,751,301 or Kilduff and Munshi 6,758,868.

Fan et al. disclose a method of making a gas diffusion electrode comprising: applying a slurry comprising carbon black (first layer which is a reaction layer) to a carbon cloth (carrier mesh) to form a coated carbon cloth; applying catalyst (function layer) to the surface by spraying an ink comprising platinum-ruthenium or platinum black catalyst and NAFION ionomer; and attaching the gas diffusion membrane electrode to a polymer electrolyte membrane by lamination to form a membrane/electrode assembly (MEA). Fan et al. disclose in one preferred embodiment applying the carbon black by tape casting using a doctor blade but do not disclose rolling the carbon black onto the carbon cloth (col. 5, line 5 – col. 8, line 54).

Kilduff teaches that in making an electrode by applying coatings to a carrier, conductive coating can be applied by roller coating, spray coating, silk screening or doctor blade (col. 4, lines 26-28).

Munshi teaches that method of casting or coating include knife coaters, doctor blade coaters, screenprinting, wire-wound bar coaters or Mayer rods, air knife coaters, squeeze roll or kiss coaters, gravure coaters, reverse roll coaters, cast film coaters, and transfer roll coaters (col. 16, lines 4-21).

Art Unit: 1734

It would have been obvious to one of ordinary skill in the art to have applied the carbon black slurry to the carbon cloth by any number of methods including doctor blade coating or various types of roller coating, as taught by either Kilduff or Munshi, as methods used to apply coatings such as conductive coatings. The use of roller coating methods such as squeeze roll or kiss coaters, reverse roll coaters and transfer roll coaters would have been obvious to one of ordinary skill in the art, as taught by Munshi, as various coating methods using a roll that can be used for coating as alternatives to other coating methods such as doctor blade coating.

Further, by spraying an ink including NAFION ionomer, a barrier layer is obviously sprayed onto the carbon black coating (rolled-on reaction layer), as claimed in Claim 81.

(10)

Claims 47, 48, 50 and 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Door 4,992,126 in view of Munshi 6,758,868.

Door discloses a method of making a current collector/electrode/membrane assembly comprising: providing a foundation layer (carrier) of carbon cloth (carrier mesh); applying a binder in solution or dispersion (first layer) to the foundation layer by a method well known in the art; and applying catalytically active particles such as platinum to the binder-coated foundation layer by spraying (col. 2, line 30 – col. 5, line 32).

Munshi teaches that method of casting or coating include knife coaters, doctor blade coaters, screenprinting, wire-wound bar coaters or Mayer rods, air knife coaters, squeeze roll or kiss coaters, gravure coaters, reverse roll coaters, cast film coaters, and transfer roll coaters (col. 16, lines 4-21).

It would have been obvious to one of ordinary skill in the art to have applied the binder solution or dispersion to the carbon cloth by any number of methods including doctor blade coating or various types of roller coating, as taught by Munshi, as methods used to apply coatings. The use of roller coating methods such as squeeze roll or kiss coaters, reverse roll coaters and transfer roll coaters would have been obvious to one of ordinary skill in the art, as taught by Munshi, as various well known coating methods using a roll that can be used for coating as alternatives to other coating methods such as doctor blade coating.

Allowable Subject Matter

(11)

Claims 82-84 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

(12)

Applicant's arguments, see amendment, filed May 31, 2005, with respect to the rejection(s) of claim(s) under either Fan et al., SU 1694411 Abstract (Bogomolov) or Door have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, new grounds of rejection are made, as previously set forth.

With respect to Fan, the disclosure is not limited to tape casting. This is merely set forth as an embodiment. With respect to Door and the required bonding, Applicant claims "a first

Art Unit: 1734

layer" which, as claimed, can be a bonding layer. Spraying the catalytically active particles on the binder results in producing an additional layer which is a function layer, as claimed, regardless of further steps in the process of Door.

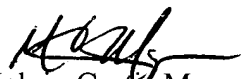
Conclusion

(13)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
August 10, 2005